

A new approach to human performance assessment through VO_2 max and resting metabolism

“ Assess, Measure, Improve my Performance ”



“

Fitmate™ is a small, inexpensive, userfriendly, lightweight, battery-powered unit, facilitating accurate metabolic measurements in both the field and in the lab⁽¹⁾”

- **VO₂max, sub-max VO₂ and Anaerobic Threshold (AT)**
- **Nutritional assessment (REE, RMR)**
- **Fitness assessment and risk analysis**
- **Body composition & comprehensive weight management**
- **Colour LCD display and embedded high speed thermal printer**
- **Software for data management, exercise prescription and HR-VO₂ training zones**
- **Accurate, affordable and easy-to-use**



Comfortable silicone masks (5 sizes, both adult and pediatric) are available for exercise testing and for resting measurements



Easy to replace, the O₂ cell comes in a sealed bag, Lifespan is 12-18 months and it is indicated by the device.

The Fitmate PRO is a desktop metabolic monitor designed to break the mould of traditional Cardio Pulmonary Exercise Testing and proposes a new approach for the measurement of oxygen consumption during exercise testing or at rest. Fitmate PRO measures VO₂max, either directly or through a sub-maximal protocol, and provides additional features like the calculation of the Anaerobic Threshold (AT) and the definition of heart rate training zones.

Fitmate PRO is a compact desktop device with internal rechargeable battery, a large LCD screen and in-built printer that allow testing without a computer or mains power lead. Fitmate PRO processes test results and stores all information inside its internal memory, ready for upload to PC software (included).

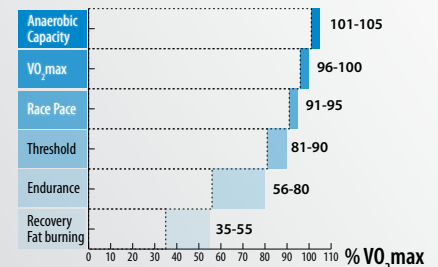
Fitmate PRO has been validated for measuring VO₂max and for predicting maximal oxygen consumption with a sub-maximal protocol.

Cardio Respiratory Fitness (VO₂max)

The Fitmate technology allows to execute the VO₂max and sub max test with most of cycle ergometers and treadmills available in the market (h/p/cosmos, Ergoline, Trackmaster, Technogym, Monark etc.).

- VO₂, ventilation, heart rate and related parameters with a 15 seconds sampling rate
- Pre-defined VO₂max and Sub-max exercise protocols and user defined protocols
- Pre-defined or custom exercise protocols (Bruce, cycle, ramp etc.)
- Automatic and adjustable Anaerobic Threshold detection
- Automatic RQ compensation during resting and graded exercise
- Automatic (protocol) or manual ergometer control
- Heart rate measurement with wireless belt (included) or TTL from ECG (optional)
- Calculation of Training Zones based on relationship between VO₂ and HR (both sub max and VO₂max testing)
- Warnings and quality control messages (mask leaks, breathing pattern etc.) are displayed during test.

Training Intensity



Training Zones based on the relationship between VO₂ and HR

Fitness Assessment

- Muscular fitness, resistance & flexibility
- Body Composition
- Standard Measurements (WHR, blood pressure etc.)
- Comprehensive Exercise Prescription report based on ACSM guidelines with a database of exercises and pictures for didactic purposes
- Cardiovascular Risk Analysis (PC software only)

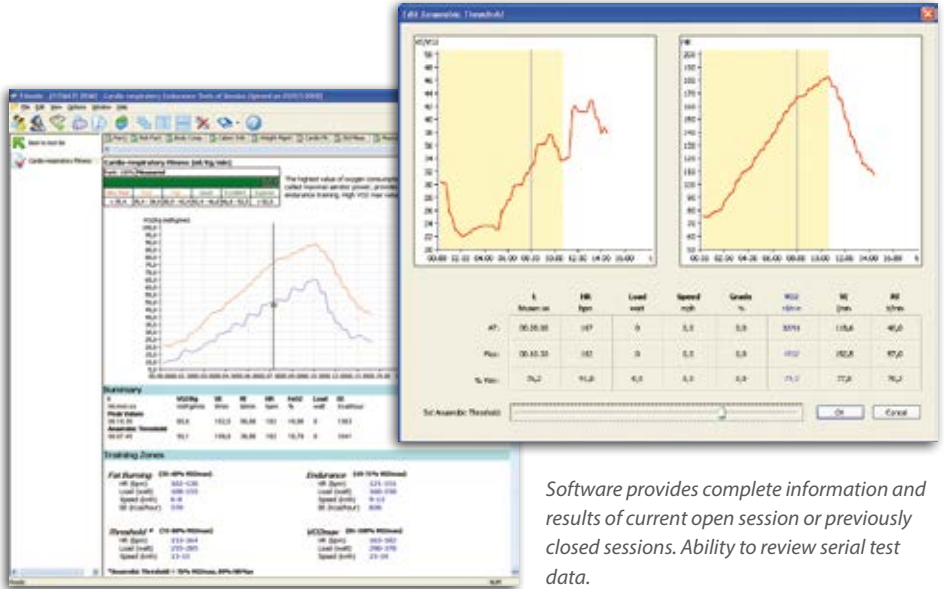
(1) Nieman DC, et al. Validation of Cosmed's FitMate in measuring exercise metabolism. *Appalachian State University, Boone, North Carolina, USA. Res Sports Med. 2007 Jan-Mar;15(1):67-75*

Nutritional Assessment

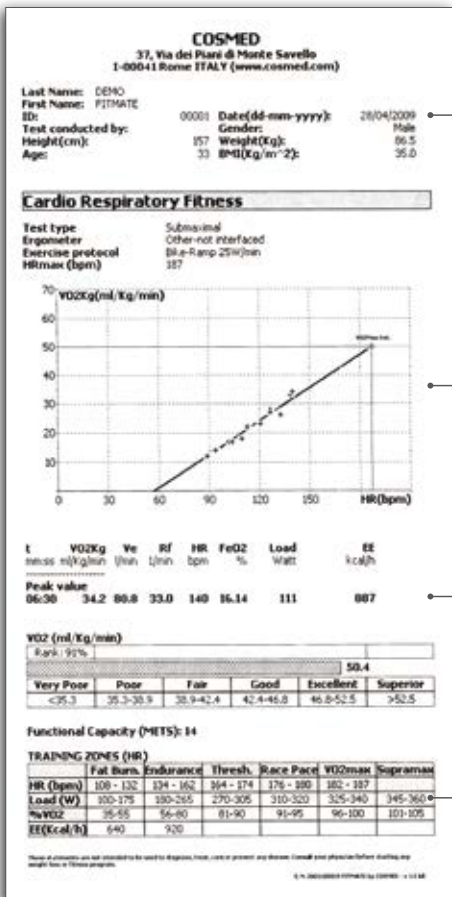
- Fitmate measures accurate oxygen consumption at rest (REE, RMR), comparable with conventional metabolic carts. Tests can be executed either with face masks (multi-use), with mouthpiece and antibacterial filter or, optionally, with an integrated canopy hood
- Individual weight management programs based on Energy Balance equation
- Weekly Dietary plan and software (w/ USDA Database);
- Complete Lifestyle and Physical activity monitoring up to 60 days (with optional monitor, Lifecorder)



Real-time screenshot of VO_{2max} and RMR tests as shown on Fitmate PRO LCD display



Software provides complete information and results of current open session or previously closed sessions. Ability to review serial test data.



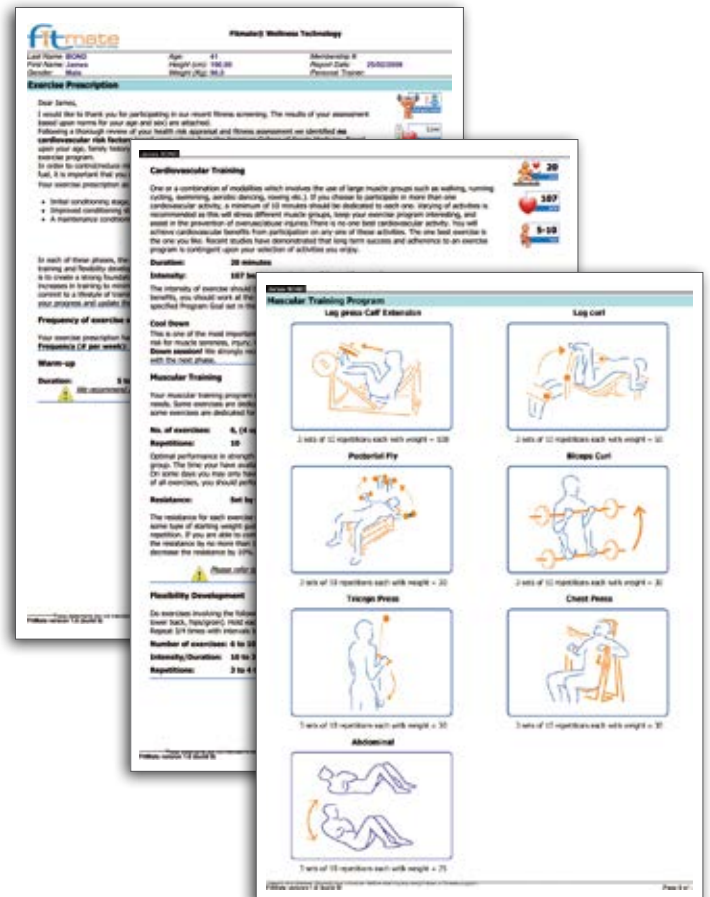
Subject data & Test Information

The Graph shows $VO_{2/Kg}$, Heart Rate

Gas Exchange Data (VO_2 , VE, HR etc.) at peak, average, or each 15 secs interval

Individual HR Training Zones based on calculated Anaerobic Threshold

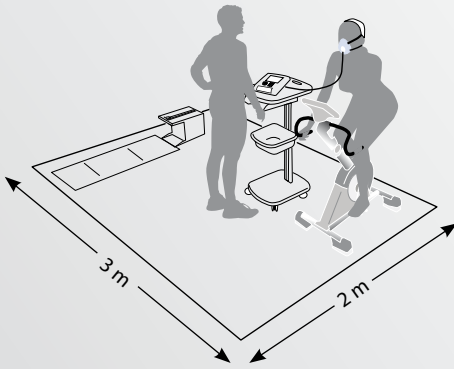
Thermal printout sample (original size 110mm wide): Sub-Maximal Exercise Test



Software printout sample (available in A4 or Letter size): ACSM Exercise Rx

Validation articles

- Vandarakis D, et al. A comparison of COSMED metabolic systems for the determination of RMR. *Res Sports Med* 2013;21(2):187
- Lee J et al. Validation Of The Cosmed Fitmate For Predicting Maximal Oxygen Consumption Medicine & Science in Sports & Exercise: May 2009 - Volume 41 - Issue 5 - p 260
- Nieman DC, et al. Validation of Cosmed's FitMate in measuring exercise metabolism. *Appalachian State University, Boone, North Carolina, USA. Res Sports Med* 2007 Jan-Mar;15(1):67-75
- Nieman DC, et al. Validation of Cosmed's FitMate in measuring oxygen consumption and estimating resting metabolic rate. *Appalachian State University, Boone, North Carolina, USA. Res Sports Med* 2006 Apr-Jun;14(2):89-96
- More scientific studies on www.cosmed.com/bibliography



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Technical Specifications

| Product | Description | REF |
|---|--|---|
| Fitmate PRO | Desktop metabolic monitor | C09066-02-99 |
| Standard packaging | Unit, Carrying Case, PC Software, Battery Charger, USB Cable, Oxygen Sensor, Roll of thermal paper, Measuring Tape, RMR Flowmeter ID18, VO ₂ Flowmeter ID28, Reusable V2 mask (Medium size), HR probe and belt, Head cap for V2 mask, Antibacterial filters (15 pcs). | |
| Standard Tests | | |
| Cardio Pulmonary Exercise Test (CPET) | Pulmonary Gas Exchange (VO ₂ , VCO ₂), VO ₂ max, Sub-max VO ₂ , Thresholds (AT, RCP), Heart Rate with HR belt | |
| Nutritional Assessment | Resting Energy Expenditure (REE, RMR). Indirect Calorimetry (w/ Face Mask or w/ mouthpieces-antibacterial filter), Weight Management Program (Energy Balance), Diet Planner, Standardized Measurements (WHR, BP, RHR, etc), Body composition by Skinfold | |
| Fitness Assessment | Muscular Endurance/Strength/Flexibility, Standardized Measurements (WHR, BP, RHR, etc), Body composition by Skinfold | |
| Exercise Prescription | ACSM Exercise Prescription, VO ₂ /HR Training Zones (based on AT) | |
| Flowmeter | VO₂ max (Turbine Ø-28mm) | RMR/REE (Turbine Ø-18mm) |
| Type | Bidirectional Digital Turbine | Bidirectional Digital Turbine |
| Flow Range | 0-16 l/s | 0-8 l/s |
| Accuracy | ± 2% or 20 ml/s (flow) ± 2% or 200 ml/min (ventil.) | ± 2% or 20 ml/s (flow) ± 2% or 100 ml/min (ventil.) |
| Resistance | <0.6 cmH ₂ O /l/s @ 14l/s | <0.7 cmH ₂ O/l/s @ 3l/s |
| Ventilation range | 0-300 l/min | 0-50 l/min |
| Gas Analyzers | O₂ | |
| Type | GFC | |
| Range | 0-25% | |
| Accuracy | ±2% (REE) ±0.02% (O ₂) | |
| Warm-up time | 10 seconds | |
| Hardware | | |
| Dimensions & Weight | 24 x 20 x 8 cm / 1.5kg | |
| Interface ports | USB A-B, RS-232, HR-TTL, Flowmeter | |
| Display | Colour LCD 320 x 240 pixel | |
| Printer | High speed thermal printer 12 cm | |
| Battery | Rechargeable Li-ion batteries (autonomy 6h; charging time 2h10) | |
| Electrical Requirements | 220V ± 10 %; 50/60Hz 110V ± 10%; 50/60Hz | |
| Firmware | | |
| Available languages | Italian, English, Spanish, French, German, Portuguese, Greek, Dutch, Turkish, Chinese, Korean, Japanese, Finnish, Polish, Russian, Slovenian | |
| Software | | |
| Available languages | Italian, English, Spanish, French, German, Portuguese, Greek, Dutch, Chinese, Finnish, Russian, Slovenian | |
| PC Configuration | Pentium or faster, Windows XP, VISTA (32/64 bit), Windows 7 (32/64 bit) 128 Mb RAM or more, USB, CD-Rom reader, 80 Mb on HD space available. | |
| Accessories & Options | Description | REF |
| REE with Canopy Hood | Kit including transparent canopy hood and blower for "gold standard" indirect calorimetry measurements at rest | C03950-01-11 |
| Fitmate cart | Fits Fitmate unit, printer, masks, printouts, carrying case | C02950-01-11 |
| Calibration syringe | 3L syringe for accuracy check of flow volume measurements | C00600-01-11 |
| O ₂ sensor replacement kit | Includes GFC sensor, sampling line and mounting key | C02748-01-11 |
| Activity Monitor Fitmate Lifecorder PLUS | Integrated one-axial, solid state accelerometer. | C03580-01-04 |
| Flexibility tester Sit & Reach box | Box for the indirect measurement of lower back and hamstring flexibility | A-662-160-001 |
| Safety & Quality Standards | | |
| MDD (93/42 EEC); FDA 510(k); EN 60601-1 (safety) / EN 60601-1-2 (EMC) | | |



To know more:

